We claim:

1. A contact lens, comprising:

a surface including a plurality of marks in an optical zone region of the lens, wherein the marks are light absorbing or light scattering with respect to light propagating in a posterior to anterior lens surface direction,

wherein the marks are non-vision impairing with the lens *in-vivo*.

2. The contact lens of claim 1, wherein the marks are on an anterior lens surface.

3. The contact lens of claim 1, wherein the marks are molded marks.

4. The contact lens of claim 1, wherein the marks are laser ablated marks.

5. The contact lens of claim 1, wherein the marks are lithographic marks.

6. The contact lens of any of claims 1 to 5, wherein the marks are in a pattern having no rotational symmetry.

7. The contact lens of any of claims 1 to 5, wherein the marks are in a pattern having no translational symmetry.

8. The contact lens of claim 6, wherein the marks are in a pattern having no rotational symmetry.

9. The contact lens of any of claims 1 to 8, wherein the marks are aligned along a predefined curve.

10. The contact lens of any of claims 1 to 8, wherein the marks are aligned along a plurality of straight lines.

11. The contact lens of claim 10, comprising two lines including at least three marks.

12. The contact lens of claim 10 or 11, wherein the straight lines intersect.

13. The contact lens of claim 12, wherein the straight lines intersect at a single common point.

14. The contact lens of any of claims 10 to 13, wherein the straight lines each has a length of about 5mm.

15. The contact lens of claim 13, comprising three straight lines including at least four marks.

16. The contact lens of claim 15, wherein the three straight lines intersect at three different intersection angles.

17. The contact lens of claim 16, wherein the intersection angles are in the range between about 100 degrees to 165 degrees with a maximum deviation of about 10 degrees.

18. The contact lens of any of claims 1 to 17, wherein the marks each have a size having a diameter less than about 200μm.

19. The contact lens of any of claims 1 to 17, wherein the marks each have a size having a diameter in a range between about 50μm to 200μm.

20. The contact lens of any of claims 1 to 19, wherein the marks have a mutual separation distance of about 600μm.

21. A method for making a contact lens measurement *in-vivo*, comprising:

a) providing a selectively marked contact lens *in-vivo*;

b) obtaining an image of said lens *in-vivo*;

c) determining a pupil coordinate parameter;

d) calculating a position and/or orientation coordinate parameter of the contact lens for each image with respect to the pupil coordinate parameter; and

e) repeating steps (a-d) at a repetition rate greater than about 10Hz over a selected time interval.

22. The method of claim 21, wherein the selected time interval is between about 5-20 seconds.

23. The method of claim 21 or 22, comprising determining a most frequently occurring position and/or orientation coordinate parameter of the contact lens over the selected time interval.

24. The method of claim 21 or 22, comprising determining a blinking interval and excluding the determination of the position and/or orientation coordinate parameter of the contact lens during the blinking interval.

25. The method of claim 23, comprising determining a blinking interval and excluding the determination of the most frequently occurring position and/or orientation coordinate parameter of the contact lens during the blinking interval.

26. The method of any of claims 21 to 25, comprising obtaining a wavefront aberration image corresponding to each contact lens image, and determining a wavefront aberration associated with each image.

27. The method of claim 26, comprising determining a most frequently occurring wavefront aberration over the selected time interval.

28. The method of claim 27, comprising determining a blinking interval and excluding the determination of the most frequently occurring wavefront aberration during the blinking interval.

29. A method for objectively evaluating a contact lens *in-vivo*, online, comprising:

a) providing a contact lens having a plurality of marks on a surface thereof, to a subject *in-vivo*;

b) illuminating the marks;

c) imaging the marks;

d) determining a position coordinate of the subject's pupil;

e) determining a position coordinate of the marks with respect to the pupil position coordinate; and

f) repeating steps (b-e) over a selected time interval, online, at a repetition rate greater than about 10Hz,

whereby the contact lens position and/or orientation is determined online

30. The method of claim 29, wherein the marks overlap a pupil area of the patient's eye.

31. The method of claim 29 or 30, comprising measuring a pupil size online at the repetition rate.

32. The method of any of claims 29 to 31, comprising determining a center of mass value for each of the imaged marks on the lens.

33. The method of any of claims 29 to 32, comprising illuminating the marks with light propagating first through a posterior surface and then through an anterior surface of the contact lens.

34. The method of any of claims 29 to 33, wherein the online measurement is made with a repetition rate in a range between about 10hz to 25hz.

35. The method of any of claims 29 to 34, comprising making a corresponding online wavefront measurement of the patient's eye.

36. The method of any of claims 29 to 35, comprising determining a most frequently occurring position and/or orientation of the *in-vivo* contact lens.

37. The method of any of claims 29 to 36, comprising determining a blinking interval of the patient's eye and excluding measurement data during the blinking interval.

38. The method of claim 37, comprising determining a most frequently occurring position and/or orientation of the contact lens.

39. The method of claim 35, comprising determining a most frequently occurring wavefront aberration over the selected time interval.

40. The method of claim 39, comprising determining a blinking interval of the patient's eye and excluding measurement data during the blinking interval.

41. The method of claim 40, comprising determining a most frequently occurring position and/or orientation of the contact lens over the selected time interval.

42. The method of claim 39, wherein the wavefront aberration is a spherical equivalent measurement.

43. The method of claim 29, wherein the specially marked contact lens is the lens according to any of claims 1 to 20.

44. The method of claim 29, comprising using a modified Hough transform to determine the position and/or orientation of the contact lens online.

45. A method for objectively evaluating a contact lens *in-vivo*, comprising:

a) providing a suitably marked contact lens to a subject, *in-vivo*;

b) determining a position coordinate of the subject's pupil;

c) determining a position coordinate of the lens with respect to the pupil position coordinate; and

f) repeating steps (a-c) over a selected time interval, online, at a repetition rate greater than about 10Hz.

46. The method of claim 45, wherein the online measurement is made with a repetition rate in a range between about 10hz to 25hz.

47. The method of claim 45 or 46, comprising making a corresponding online wavefront measurement of the patient's eye.

48. The method of any of claims 45 to 47, comprising determining a most frequently occurring position and/or orientation of the *in-vivo* contact lens.

49. The method of any of claims 45 to 48, comprising determining a blinking interval of the patient's eye and excluding measurement data during the blinking interval.

50. The method of claim 49, comprising determining a most frequently occurring position and/or orientation of the contact lens.

51. The method of claim 47, comprising determining a most frequently occurring wavefront aberration over the selected time interval.

52. The method of claim 51, comprising determining a blinking interval of the patient's eye and excluding measurement data during the blinking interval.

53. The method of claim 52, comprising determining a most frequently occurring position and/or orientation of the contact lens over the selected time interval.

54. The method of claim 51, wherein the wavefront aberration is a spherical equivalent measurement.

55. An algorithm for determining pupil parameters, comprising the steps of:

a) obtaining a pupil image;

b) compressing the pupil image by a selected amount, n, and compressing the pupil image by a different selected amount, $n_1 < n$, where $n_1 < 10$;

c) calculating a threshold value for the compressed pupil image;

d) determining a center parameter value of the pupil;

e) determining a multiple-coordinate axes diameter parameters of the pupil;

f) determining a perimeter shape of the pupil based upon the center and multiple-coordinate axes parameters;

g) plotting the shape into the compressed image and determine average pixel signal values inside of the perimeter;

h) enlarging the perimeter by a selected amount, Δ, and repeat steps (c, d) on a new image with the enlarged perimeter;

i) determining a fringe point position at each end of each of the diameter coordinate axes, and fitting a perimeter shape to the points;

j) repeating step (d) on an image obtained from step (i);

k) repeating step (g) on the n_1 compressed pupil image;

l) repeating step (h) on the step (k) image, with a $\Delta_1 < \Delta$;

m) repeating steps (d, e) on the step (l) image;

n) making an eyelid-correction on the step (m) image; and

o) repeating steps (d, e) on the step (n) image.

56. The algorithm of claim 55, where n is an integer, and $1 \leq n < 20$.

57. The algorithm of claim 55 or 56, wherein step (c) comprises creating a binary image by setting all pixel values below the threshold to a zero value and all pixel values above the threshold to a high value.

58. The algorithm of claim 57, wherein a center of mass is determined for the zero value pixels as well as a standard deviation, which is used to determine diameter values along an x-coordinate axis and a y-coordinate axis.

59. The algorithm of claim 58, wherein the perimeter shape is an ellipse.

60. The algorithm of claim 59, wherein Δ is in a range between about 5% to 25%, and Δ_1 is in a range between about 5% to 25%.

61. The algorithm of claim 60, wherein step (i) comprises fitting an ellipse to fringe points at each end of the x-coordinate axis and a y-coordinate axis.

62. The algorithm of claim 61, wherein step (n) comprises scanning every pixel column that contains a found ellipse perimeter, and computing a difference function between the ellipse perimeter and the pupil fringe as a function of X-position.

63. The algorithm of claim 62, comprising determining at least two maxima and a minimum in between said maxima of the difference function and, based upon satisfying a selected error-criteria, locating an arc of the found ellipse between the X-positions of the two maxima.

64. The algorithm of claim 63, comprising determining the pupil center parameter and the pupil size parameter.